



UNITED STATES PATENT AND TRADEMARK OFFICE

cen

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/803,399

03/18/2004

Stephan K. Barsun

200313138-1

5524

22879

7590

12/12/2006

HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

PAPE, ZACHARY

ART UNIT

PAPER NUMBER

2835

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/803,399	BARSUN ET AL.	
	Examiner	Art Unit	
	Zachary M. Pape	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-13, 15-19, 23, 25, 27-37, 39-43 and 46-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19, 23, 25, 27-33, 43 and 47 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 8, 17, 34-37, 39-42 and 51-55 is/are rejected.
- 7) ☒ Claim(s) 3, 5-7, 9-13, 15-16, 18, 46 and 48-50 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/17/2006 has been entered.

Examiner's Note

As per the Applicants' remarks on page 16, the limitations of claim 44 have been incorporated into claim 43, however the presently filed claims, which recite that claim 43 is currently amended, does not reflect the incorporated subject matter in the form of underlined text. For the purposes of Examination, the examiner has considered the limitations as present in claim 43 despite the error.

Drawings

The objection to the drawings has been withdrawn in view of the cancellation of claim 14.

Claim Rejections - 35 USC § 112

The 112 rejection to claim 4 has been withdrawn in view of the cancellation of claim 4.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 17 recites the limitation "the fourth device". There is insufficient antecedent basis for this limitation in the claim. For the purposes of examination, the Examiner has considered the fan limitation with only a second device.

Claim 54 recites the limitation, "the second heat sink having fins" which lacks antecedent basis because the second heat sink is not described as having fins in base claim 41. For the purposes of examination, the Examiner has considered the second heat sink to have the fins as claimed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 8, 17, 39, 40, 55 are rejected under 35 U.S.C. 102(b) as being anticipated by Patel (US 5,396,403).

With respect to claims 1 and 55, Patel teaches (In Fig 4) a computing system comprising: a circuit board (61); a first device (67) having a first heat transfer surface (Adjacent 81), a first heat sink (83) including: a first base (Adjacent the line for element number 83) thermally coupled to the first heat transfer surface (Column 6, Lines 5-18); and a first array of fins thermally coupled to the first base so as to extend away from the first base in a first direction (Downward, See Fig 4), wherein the first array of fins includes consecutive fins forming a transverse channel (See Fig 4) therebetween extending in a second direction perpendicular to the first direction and having opposite transverse open ends (See Fig 4) a second device (63) coupled to the circuit board (61), the second device having a second heat transfer surface (Adjacent 73); and a second heat sink (75) including: a second base (Adjacent the element number line for 75) thermally coupled to the second heat transfer surface (Column 6, Lines 5-18); and a second array of fins (See Fig 4) coupled to the second base and extending at least partially across the first array of fins (See Fig 4).

With respect to claim 2, Patel further teaches that the first device (67) is electrically connected to the second device (63, via circuit board 61).

With respect to claims 8 and 55, Patel further teaches that the second array of fins (adjacent 75) overlaps opposite sides of the first device (67, see Fig 4).

With respect to claim 17, Patel further teaches a fan (Column 5, Lines 10-12) configured to create an air flow across the second device.

With respect to claim 39, Patel further teaches a heat dissipating arrangement comprising: a first heat emitting device (63); a second heat emitting device (67); and a

first heat sink (75) having fins thermally coupled to the first device (Column 6, Lines 5-18), wherein the fins of the first heat sink overlap and extend opposite to opposite sides of the second device (See Fig 4).

With respect to claim 40, Patel further teaches a second heat sink (83) thermally coupled to the second device, (67, Column 6, Lines 5-18) wherein the first heat sink extends on opposite sides of the second heat sink (See Fig 4).

Claims 41-42, 54 are rejected under 35 U.S.C. 102(b) as being anticipated by DiBene, II et al. (US 6,356,448 – hereafter referred to as DiBene).

With respect to claims 41, and 54 DiBene further teaches a first heat sink for use with a first heat emitting device (118), a second heat emitting device, and a second heat sink thermally coupled to the second heat emitting device the first heat sink comprising: at least one heat dissipating structure (142) having fins (144) configured to be thermally coupled to the first heat emitting device while extending at least partially around and on opposite sides of the second heat sink having fins (As illustrated in Fig 1, wherein the fins are comprised of the material between apertures 168).

With respect to claim 42, DiBene further teaches a first heat emitting device (118), a second heat emitting device, and a second heat sink thermally coupled to the second heat emitting device and having a plurality of fins (158, 168), the first heat sink comprising: at least one heat dissipating structure (142) configured to be thermally coupled to the first heat emitting device while extending at least partially around and on opposite sides of the plurality of fins of the second heat sink (As illustrated in Fig 3).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 34-37, 39-40 (alternatively), and 51-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants Admitted Prior Art (Hereinafter AAPA) in view of DiBene, II et al.

With respect to claims 34, AAPA teaches (on Page 1 of the present specification, specifically paragraphs 0002 and 0003) a processor module comprising: a processor having a first heat transfer surface; a power pod electrically connected to the processor to supply power to the processor, the power pod having a second heat transfer surface, a first heat sink overlapping the power pod and thermally coupled to the second heat transfer surface; and a second heat sink thermally coupled to the first heat transfer surface. AAPA is silent as to the second heat sink extending at least partially across the first heat sink. DiBene teaches the conventionality of having a heat sink (142) extend at least partially across another heat sink (Comprising 106, 126, and 128). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of DiBene et al. with that of AAPA to provide improved packaging of electronic circuits while also providing efficient means to purge any excess associated heat from electronic assemblies (See Column 1, Lines 15-

18, I.E. use the heat sink configuration taught to increase heat dissipation and preserve packaging and power distribution qualities).

With respect to claim 35, DiBene et al. further teaches that the second heat sink (142) extends completely across the first heat sink (106, 126, 128, See Fig 2).

With respect to claim 36, DiBene et al. further teaches that the second heat sink extends on opposite sides of the first heat sink (See Fig 2).

With respect to claim 37, AAPA further teaches (See Page 1, paragraphs 0001 – 0003 a multi-device heat sink module for being connected to a circuit board, the module comprising: a power supply, a processor, a first means for dissipating heat emitted by the power supply while not substantially receiving heat from the processor, and a second means for dissipating heat emitted by the processor ("To cool or dissipated heat from processors and power pods, many computer systems include heat sinks positioned adjacent the processor and the power pod"). AAPA is silent as to the second means extending at least partially across and over the first means. DiBene teaches the conventionality of having a second heat sink (142) extend at least partially across a first heat sink (Comprising 106, 126, and 128). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of DiBene et al. with that of AAPA to provide improved packaging of electronic circuits while also providing efficient means to purge any excess associated heat from electronic assemblies (See Column 1, Lines 15-18, I.E. use the heat sink configuration taught to increase heat dissipation and preserve packaging and power distribution qualities).

With respect to claim 39, AAPA further teaches (See paragraphs 0001, 0002, and 0003) a heat dissipating arrangement comprising: a first heat emitting device; a second heat emitting device; and a first heat sink thermally coupled to the first device. AAPA is silent as to the fins of the first device overlapping and extending opposite to opposite sides of the second device. DiBene teaches the conventionality of having a first heat sink (142) overlapping and extending opposite to opposite sides of a second heat sink (Comprising 106, 126, and 128). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of DiBene et al. with that of AAPA to provide improved packaging of electronic circuits while also providing efficient means to purge any excess associated heat from electronic assemblies (See Column 1, Lines 15-18, I.E. use the heat sink configuration taught to increase heat dissipation and preserve packaging and power distribution qualities).

With respect to claim 40, AAPA further teaches a second heat sink thermally coupled to the second device. DiBene et al. further teaches that the first heat sink extends on opposite sides of the second heat sink (See Fig 1).

With respect to claims 51-53, DiBene et al. further teaches a first heat sink (Comprising 106, 126, 128) sandwiched between a processor (108) and a second heat sink (142).

Allowable Subject Matter

5. Claims 19, 23, 25, 27-33, 43 and 47 are allowed (See the previous office action dated 7/18/2006).
6. Claims 3, 5-7, 9-13, 15-16, 18, 46, 48-50 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

With respect to claim 3, the allowability resides in the overall structure of the device as recited in dependent claim 3 and at least in part because claim 3 recites, "wherein the first array of fins overlaps the first device".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 3 are believed to render said claim 3 patentable over the art of record.

With respect to claims 5-7, the allowability resides in the overall structure of the device as recited in dependent claims 5 and 7 and at least in part because claims 5 and 7 recite, "wherein the first device comprises a power pod assembly".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 5 or 7 respectively are believed to render said claims 5 and 7 and any claims dependent therefrom (Claim 6 from claim 5) patentable over the art of record.

With respect to claims 9-12, the allowability resides in the overall structure of the device as recited in dependent claim 9 and at least in part because claim 9 recites, "wherein the second heat sink includes a heat pipe".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 9 are believed to render said claim 9 and any claims dependent therefrom (claims 10-12) patentable over the art of record.

With respect to claim 13, the allowability resides in the overall structure of the device as recited in dependent claim 13 and at least in part because claim 13 recites, "wherein the first device and the second device are coupled to one another to form a multi-device module adapted to be connected to the circuit board".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 13 are believed to render said claim 13 patentable over the art of record.

With respect to claim 15, the allowability resides in the overall structure of the device as recited in dependent claim 15 and at least in part because claim 15 recites, "including a central electronic control coupled to the circuit board".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 15 are believed to render said claim 15 patentable over the art of record.

With respect to claim 16, the allowability resides in the overall structure of the device as recited in dependent claim 16 and at least in part because claim 16 recites, "a baseboard coupled to the circuit board".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 16 are believed to render said claim 16 patentable over the art of record.

With respect to claim 18, the allowability resides in the overall structure of the device as recited in dependent claim 18 and at least in part because claim 18 recites, "the first array of fins is interleaved with the second array of fins".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 18 are believed to render said claim 18 patentable over the art of record.

With respect to claim 46, the allowability resides in the overall structure of the device as recited in dependent claim 46 and at least in part because claim 46 recites, "wherein the first base is horizontally spaced from and beside the second base".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 46 are believed to render said claim 46 patentable over the art of record.

With respect to claim 48, the allowability resides in the overall structure of the device as recited in dependent claim 48 and at least in part because claim 48 recites, "the first heat sink is sandwiched between the first device and the second heat sink".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 48 are believed to render said claim 48 patentable over the art of record.

With respect to claims 49-50, the allowability resides in the overall structure of the device as recited in dependent claim 49 and at least in part because claim 49 recites, "the second array of fins extend away from the second base in the first direction".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 49 are believed to render said claim 49 and all claims dependent therefrom (Claim 50) patentable over the art of record.

Response to Arguments

7. Applicant's arguments, see Pages 13-15, filed 10/17/2006, with respect to the rejection(s) of claim(s) 1-3, 5-13, 15-18, 34-36, 37, 39-40 under DiBene et al. have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration of the newly added limitations, a new ground(s) of rejection is made in view of Patel, Applicant's Admitted Prior Art, and DiBene et al.

8. Applicant's arguments filed 10/17/2006 to claims 41-42 have been fully considered but they are not persuasive.

With respect to the Applicants' remarks to claims 41-42 that, "nowhere does Figure 1 of DiBene disclose a first heat sink that extends at least partially around another heat sink" the Examiner respectfully disagrees. As noted in the previous office action dated 7/18/2006 and herein, DiBene et al. clearly teaches that the at least one heat dissipating structure (142) is configured to.. extend at least partially around.. the second heat sink (106, 126, 128). The Examiner further notes that "at least partially around" can be read broadly enough to include the heat sink (142) of DiBene extending only on one side of the second heat sink (106,126,128).

9. Applicant's arguments with respect to claims 51-55 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary M. Pape whose telephone number is 571-272-2201. The examiner can normally be reached on Mon. - Fri. (7:00am - 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached at 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ZMP


LISA LEA-EDMONDS
PRIMARY EXAMINER